

Claims

1. A voltage-controlled oscillator circuit connected to supply and reference voltages for radio frequency operation, comprising:

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at least one inductor;

at least one varactor connected in parallel with the at least one inductor;

10 a pair of p-channel MOS transistors connected across the at least one varactor, each p-channel transistor having source, drain, and gate terminals, wherein the drain terminal of the first of the pair of p-channel MOS transistors is connected to the gate terminal of the second of the pair of p-channel MOS transistors and the drain terminal of second of the pair of MOS transistors being connected to the gate terminal of the
15 first of the pair of MOS transistors; and

biasing means for providing a biasing current to the voltage-controlled oscillator circuit, the biasing means configured according to one of a biasing n-channel MOS transistor connected to the supply voltage and a biasing p-channel MOS
20 transistor connected to the reference voltage.

2. The voltage-controlled oscillator circuit of claim 1, wherein when the biasing means is configured according to the biasing n-channel MOS transistor connected to the supply voltage, the biasing n-channel MOS transistor having source, drain, and
25 gate terminals, the drain terminal of the biasing n-channel MOS transistor is connected to the supply voltage.

3. The voltage-controlled oscillator circuit of claim 2, wherein the gate terminal of the biasing n-channel MOS transistor is connected to a biasing voltage.

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4. The voltage-controlled oscillator circuit of claim 3, wherein the source terminal of the biasing n-channel MOS transistor is connected to the source terminals of the pair of p-channel MOS transistors.

5. The voltage-controlled oscillator circuit of claim 4, wherein the at least one inductor is configured according to a pair of first and second inductors connected in series and the connection therebetween is connected to the reference voltage.
- 5 6. The voltage-controlled oscillator circuit of claim 1, wherein when the biasing means is configured according to the biasing p-channel MOS transistor connected to the reference voltage, the biasing p-channel MOS transistor having source, drain and gate terminals, the drain terminal of the biasing p-channel MOS transistor is
- 10 connected to the reference voltage.
7. The voltage-controlled oscillator circuit of claim 6, wherein the gate and drain terminals of the biasing p-channel MOS transistor are connected.
- 15 8. The voltage-controlled oscillator circuit of claim 7, wherein the at least one inductor is configured according to a pair of first and second inductors connected in series.
9. The voltage-controlled oscillator circuit of claim 8, wherein the source
- 20 terminal of the biasing p-channel MOS transistor is connected to the inter-connection between the pair of first and second inductors.
10. The voltage-controlled oscillator circuit of claim 9, wherein the source terminals of the pair of p-channel MOS transistors are connected to the supply
- 25 voltage.
11. A voltage-controlled oscillator circuit connected to supply and reference voltages for radio frequency operation, comprising:
- 30 at least one inductor;
- at least one varactor connected in parallel with the at least one inductor;

a pair of p-channel MOS transistors connected across the at least one varactor, each p-channel transistor having source, drain, and gate terminals, wherein the drain terminal of the first of the pair of p-channel MOS transistors is connected to the gate terminal of the second of the pair of p-channel MOS transistors and the drain terminal of second of the pair of MOS transistors being connected to the gate terminal of the first of the pair of MOS transistors; and

biasing means for providing a biasing current to the voltage-controlled oscillator circuit, the biasing means configured according to a biasing n-channel MOS transistor connected to the supply voltage and a biasing p-channel MOS transistor connected to the reference voltage.

12. The voltage-controlled oscillator circuit of claim 11, the biasing n-channel MOS transistor having source, drain, and gate terminals, wherein the drain terminal of the biasing n-channel MOS transistor is connected to the supply voltage.

13. The voltage-controlled oscillator circuit of claim 12, wherein the gate terminal of the biasing n-channel MOS transistor is connected to a biasing voltage.

14. The voltage-controlled oscillator circuit of claim 13, wherein the source terminal of the biasing n-channel MOS transistor is connected to the source terminals of the pair of p-channel MOS transistors.

15. The voltage-controlled oscillator circuit of claim 11, the biasing p-channel MOS transistor having source, drain and gate terminals, wherein the drain terminal of the biasing p-channel MOS transistor is connected to the reference voltage.

16. The voltage-controlled oscillator circuit of claim 15, wherein the gate and drain terminals of the biasing p-channel MOS transistor are connected.

17. The voltage-controlled oscillator circuit of claim 16, wherein the at least one inductor is configured according to a pair of first and second inductors connected in series.

18. The voltage-controlled oscillator circuit of claim 17, wherein the source terminal of the biasing p-channel MOS transistor is connected to the inter-connection between the pair of first and second inductors.
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19. A method for configuring a voltage-controlled oscillator circuit connected to supply and reference voltages for radio frequency operation, the method comprising the steps of:
- 10 providing at least one inductor;
- connecting at least one varactor in parallel with the at least one inductor;
- connecting a pair of p-channel MOS transistors across the at least one varactor, each p-channel transistor having source, drain, and gate terminals, wherein
- 15 the drain terminal of the first of the pair of p-channel MOS transistors is connected to the gate terminal of the second of the pair of p-channel MOS transistors and the drain terminal of second of the pair of p-channel MOS transistors being connected to the gate terminal of the first of the pair of p-channel MOS transistors; and
- 20 providing biasing means for providing a biasing current to the voltage-controlled oscillator circuit, the biasing means configured according to a biasing n-channel MOS transistor connected to the supply voltage and a biasing p-channel MOS transistor connected to the reference voltage.
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20. The method as in claim 19, the biasing p-channel transistor having source, drain and gate terminals and the drain terminal of the biasing p-channel MOS transistor is connected to the reference voltage, further comprising the step of connecting the gate and drain terminals of the biasing p-channel MOS transistor.
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